

5 We claim:

13. A composite comprising

10 Aa) at least one first layer which comprises a mixture Ia, comprising a mix IIa consisting of

15 a) from 1 to 95 % by weight of a solid III, preferably a basic solid III, having a primary particle size of from 5 nm to 20 μm and

15 *c'*

20 b) from 5 to 99 % by weight of a polymeric composition IV obtainable by polymerization of

25 b1) from 5 to 100 % by weight, based on the composition IV, of a condensation product V of

25 *Sub S1*

30 $\alpha)$ at least one compound VI which is able to condense with a carboxylic acid or a sulfonic acid as defined in β or a derivative or a mixture of two or more thereof, and

35 $\beta)$ at least 1 mol per mol of the compound VI of a carboxylic acid or sulfonic acid VII which contains at least one free-radically polymerizable functional

group, or a derivative thereof or a mixture of two or
more thereof,

and

5 b2) from 0 to 95 % by weight, based on the composition IV, of
a further compound VIII having a mean molecular weight
(number average) of at least 5000 and polyether segments in
the main chain or a side chain,

10 where the proportion by weight of the mix IIa in the mixture
Ia is from 1 to 100 % by weight,

and the layer is free of an electron-conducting, electro-
chemically active compound,

and

15 B) at least one second layer which comprises a polymeric binder and
an electron-conducting, electrochemically active compound,

20 wherein the first layer or layers and the second layer or layers are joined to
one another by one of the two methods V1 or V2:

25 V1) Lamination of the first layer or layers with the second layer or
layers under the action of heat or under the action of heat and
pressure, or

30 V2) Corona treatment of the first layer or layers, the second layer or
layers or the first layer or layers and the second layer or layers and
subsequent bringing together of the corona-treated first layer or
layers with the corona-treated second layer or layers.

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*A
Sub D1*

14. A composite comprising

5 Ab) at least one first layer which comprises a mixture Ib comprising a mix IIb consisting of

10 a) from 1 to 95 % by weight of a solid III, preferably a basic solid, having a primary particle size of from 5 nm to 20 μ m and

15 b) from 5 to 99 % by weight of a polymer IX obtainable by polymerization of

20 b1) from 5 to 75 % by weight, based on the polymer IX, of a free-radically polymerizable compound X selected from the group consisting of

25 olefinic hydrocarbons, (meth)acrylonitrile, halogens containing olefinic compounds, vinyl alcohol, vinyl acetate, N-vinylpyrrolidone, N-vinylimidazole, vinyl formamide, phosphonitrilic chlorides and derivatives thereof which are partly or completely substituted by alkoxy, phenoxy, amino and fluoroalkoxy groups, aromatic olefinic compounds and vinyl ethers, and which is different from the carboxylic acid or the sulfonic acid VII or a derivative thereof, or a mixture of two or more thereof,

30 and

b2) from 25 to 95 % by weight, based on the polymer IX, of a further compound VIII having a mean molecular weight

(number average) of at least 5000 and polyether segments in the main chain or a side chain,

where the proportion by weight of the mix Ib is from 1 to 100 % by weight

and the layer is free of an electron-conducting, electrochemically active compound,

10 and

B) at least one second layer which comprises an electron-conducting, electrochemically active compound,

15 wherein the first layer or layers and the second layer or layers are joined to one another by one of the two methods V1 or V2:

20 V1) Lamination of the first layer or layers with the second layer or layers under the action of heat or under the action of heat and pressure, or

25 V2) Corona treatment of the first layer or layers, the second layer or layers or the first layer or layers and the second layer or layers and subsequent bringing together of the corona-treated first layer or layers with the corona-treated or untreated second layer or layers.

15. A composite comprising
at least one first layer Aa or at least one first layer Ab or at least one first layer Aa and at least one first layer Ab,
30 at least one second layer B,
each as defined in claim 13, and

C) at least one bonding layer.

16. A composite as claimed in claim 15, wherein the bonding layer or layers C

5 has/have a melting point which is lower than the melting point of the first layer or layers or the second layer or layers or the first and second layer or layers.

17. A composite as claimed in claim 15, wherein the bonding layer or layers C

10 is/are a polyethylene oxide, a polyvinyl ether, a polyacrylate, a polymethacrylate, polyvinylpyrrolidone, a polyurethane, a wax-like (co)polyolefin, a rubber-like material, polyisobutylene or a mixture of two or more thereof.

15 18. A composite as claimed in claim 15, wherein the bonding layer or layers C comprise(s) a solid III, a plasticizer or a combination of two or more thereof.

19. A process for producing a composite as claimed in claim 13, which
20 comprises joining the first layer or layers and the second layer or layers and, if present, the bonding layer or layers to one another by hot lamination.

20. A process for producing a composite as claimed in claim 14, which
25 comprises joining the first layer or layers and the second layer or layers and, if present, the bonding layer or layers to one another by hot lamination.

21. A process for producing a composite as claimed in claim 13, which
30 comprises subjecting the first layer or layers or the second layer or layers or the first layer or layers and the second layer or layers to a corona

*Step D3
Corona*
treatment and subsequently joining the first corona-treated layer or layers to the second corona-treated or untreated layer or layers.

22. A process for producing a composite as claimed in claim 14, which comprises applying at least one bonding layer to the first layer or layers, the second layer or layers or the first and the second layer or layers and subsequently joining the first layer or layers to the second layer or layers via the bonding layer or layers.

10 23. A process for producing a composite as claimed in claim 15, which comprises applying at least one bonding layer to the first layer or layers, the second layer or layers or the first and the second layer or layers and subsequently joining the first layer or layers to the second layer or layers via the bonding layer or layers.

24. ~~Method of using a composite as claimed in claim 13 electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.~~

2 25. Method of using a composite as claimed in claim 14 for producing an electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.

25 26. Method of using a composite as claimed in claim 15 for producing an electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.

30 27. An electrochemical cell comprising a composite as claimed in claim 13 or a combination of two or more thereof.

28. An electrochemical cell comprising a composite as claimed in claim 14 or a combination of two or more thereof.

29. An electrochemical cell comprising a composite as claimed in claim 15 or a combination of two or more thereof.

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30. Method of using the electrochemical cell as claimed in claim 23 as an automobile battery, instrument battery, planar battery or polymer battery. --